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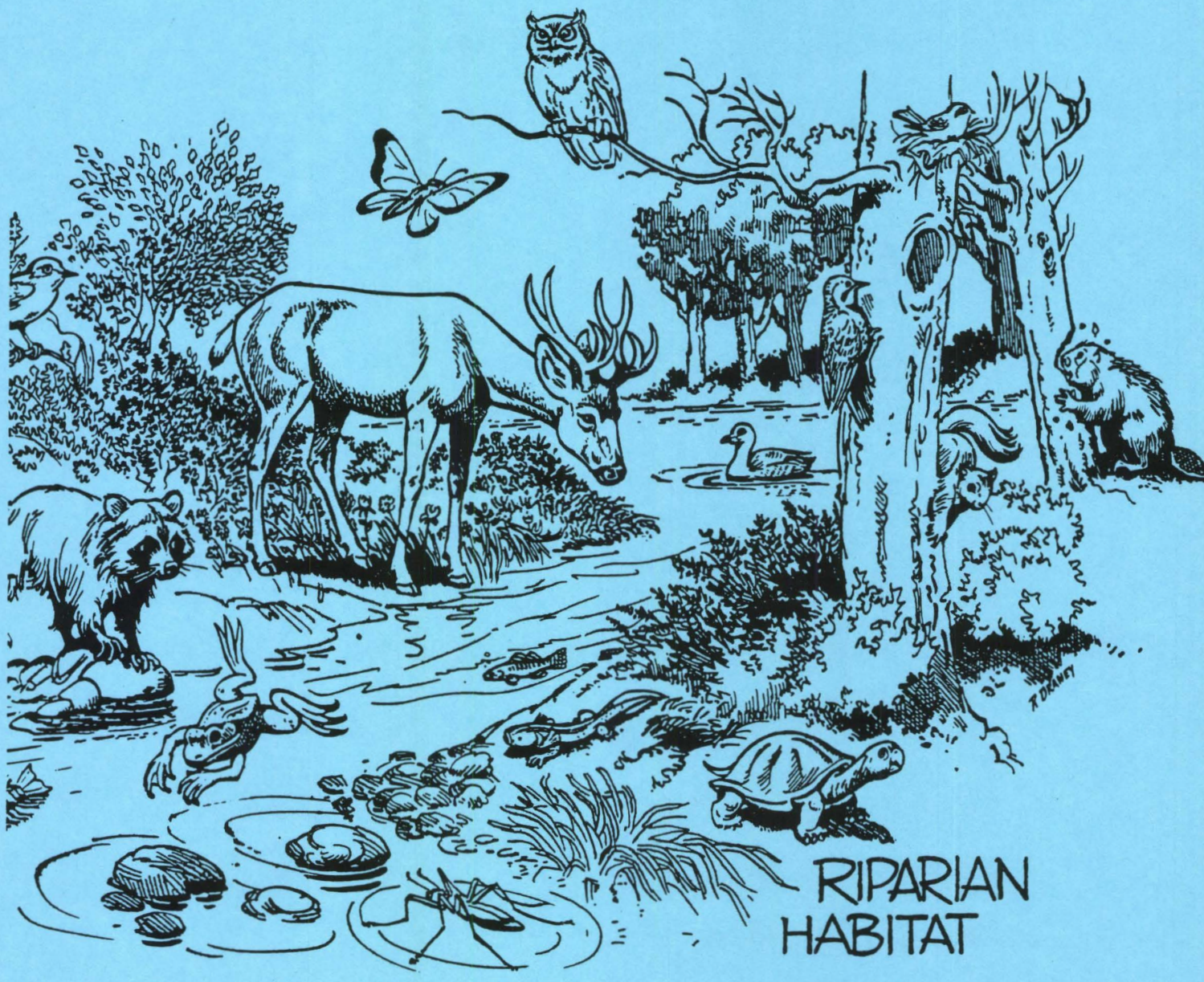
DEVELOPING AN INTERPRETIVE MAP



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DEVELOPING AN INTERPRETIVE MAP FOR THE CIMARRON RIVER VALLEY

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Final

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EXECUTIVE SUMMARY

Title: Developing an Interpretive Map for the Cimarron River Valley, Gunnison County, Colorado.

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Summary:

The purpose of this project was to educate and influence the people who visit the Cimarron River valley drainage. The Cimarron Valley is administered by the Ouray Ranger District of the Uncompahgre National Forest. This paper outlines management's concerns for the immense and fragile riparian zones within the Cimarron Valley; why they are concerned for the lands and how recreational activities are influencing the management of these lands.

The Cimarron River Drainage possesses a valuable watershed that provides irrigation to farms and ranches, domestic water to the town of Montrose and recreation opportunities to thousands of visitors. Water has always been the life line for man and beast and thus both cattle and people are inherently drawn to it. It is because of this universal need for water that land managers make a conscious effort to protect this precious resource. Traditional methods of protecting riparian zones have been to close areas through fencing or to develop areas by designating camping and parking sites.

This paper explores the option of reducing the impacts of recreation users along fragile riparian zones by manipulating visitor's behavior through interpretation. Developing an appropriate interpretive message required analysis of the audience and selecting the channel and the message. The message was formulated from data obtained through a visitor survey. The message was tested on junior high students for clarity. Modifications were made to both the medium and the message based on reactions and feedback from the junior high students. Success of the message will be evaluated through responses and feedback of the visitors once the message is displayed on site. Several years of monitoring is necessary to determine if the interpretative message has affected attitude and behavior. Attitude and behavior change by the visitors is the desired outcome of the interpretive message.

ACKNOWLEDGMENTS

I would like to acknowledge the people who contributed to the completion of this project, beginning with the Forest Supervisor, Recreation staff and District Ranger who supported my attendance at Clemson University . I wish to recognize the many specialists who provided me with input that formulated the interpretive messages throughout the map. And I would like to specifically extend thanks to the following people.

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Title: Developing an Interpretive Map for the Cimarron River Valley.

Abstract:

Protecting fragile riparian zones while allowing the public to enjoy their recreation activities can become a balancing act. This paper looks at using interpretation as a management tool to accomplish both protection of the resource and promotion of visitor enjoyment.

Basic interpretive principles are outlined and applied to develop themes and objectives for the interpretive message. Along with the interpretive message, the channel (medium) and receiver (audience) are analyzed. A non-traditional approach was taken in developing the interpretive map. Light hearted caricatures portrayed the technically correct environmental message. The interpretive messages were reviewed by a test group for clarity. The success of this endeavor can only be determined after feedback is obtained from the target audience - the recreationist.

Keywords: Interpretation, Visitor profile, Message, Channel, Receiver,Riparian areas.

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I. THE STORY

In the beginning, God created the heavens and the earth and then decided to perfect his work by creating the Cimarron Valley. Cut by glacial activity, the three forks together with the main river channel create over 60 square miles of valley enclosed within rugged parallel tributaries whose headwaters begin high in the Cimarron mountains on the Uncompahgre National Forest. The three drainages, East Fork, Middle Fork and West Fork, combine to become the Big Cimarron River.

Each of the three channels contains a gently rounded U-shaped valley that is typical of glacial deposition. Nowhere else in the state do three rivers of this magnitude and length exist in a parallel formation (Butler, 1992). This unique formation provides an unusually large proportion of riparian zones within a limited land mass (Appendix A). A terminal moraine, or the end of the glacial activity, exists approximately one mile from the forest boundary. The sudden shift of the river channel from gentle gradients to deep canyons typifies this phenomenon.

Once the three forks combine to become the Big Cimarron River, its course continues beyond the forest where a portion of the flow is diverted for irrigation. The remaining water deposits into the Gunnison River. The Gunnison River is the sole source of municipal water for the city of Montrose (Howard, 1993). So, in an around about way, the water that begins high in the mountains of the Big Blue Wilderness ends up on the dinner tables in Montrose, Colorado.

History of the Area

Throughout the early 1900's the Cimarron Valley existed primarily for the profit of man. Six lode claims for gold and silver were filed on lands along the East Fork drainage. Silver Jack, the most profitable of the mines, operated from 1921 to 1930 and extracted gold, silver, zinc and lead (Stevens et al., 1977). The harvesting of both spruce for mine timbers and aspen for match sticks was a common practice. Rangelands were grazed by domestic sheep and cattle, and water was diverted from the Big Cimarron river to irrigate downstream farms and homesteads. Man even profited spiritually by enjoying the Cimarron area for its inherent beauty. Fishing was abundant, game was available and the local population enjoyed the recreational advantages that the valley had to offer. During this time the Cimarron valley was truly a primitive recreation experience. Roads were rough and limited. Amenities in the form of campgrounds, potable water and developed picnic areas were nonexistent. Recreationists enjoyed the primitive and quiet atmosphere that the valley had to offer.

During the 1950's, man's influence became more noticeable. Two rustic campgrounds were developed at the north end of the national forest. The main access road was upgraded to accommodate logging activity, and the Bureau of Reclamation initiated a feasibility study for water storage in the form of a 322 (surface) acre reservoir.

The feasibility study was finalized in 1961 and dam construction began on October 21, 1966. The completion of the 322 acre Silver Jack Reservoir brought additional attention to the Cimarron Valley. The road system was again improved and plans to develop a modern fully accessible campground was in the works. An increase in fishing opportunities was created by the reservoir, and recreation activities began to take on a new dimension. Silver Jack Campground, with its

paved road and large pull through spurs attracted the RV user to the Cimarron Valley for the first time. The historical user also continued to come to the area, yet contrary to management's strategy, did not fill the million dollar campground. Instead, camping and recreating in more primitive settings, predominately along the banks of the three forks of the Cimarron River remained their pattern of use (USFS 1991). Even today, use patterns indicate that over 50% of the visitors to the area gravitate even prefer, the non developed and primitive atmosphere of the Cimarron drainage.

By 1980, many of the commodity based activities of the Cimarron Valley had ceased. Logging became limited due to the designation of the Big Blue Wilderness which removed thousands of timbered acres from commercial harvesting activities. Public pressure to preserve the scenic landscape of the area eliminated the remaining available timber lands (French, 1993). After 1930 mining was no longer profitable (Freeman, 1988). Yet grazing and recreation continued. Management of domestic livestock and recreational activities were now the dominant concerns of the Cimarron Valley.

Grazing and Recreation Impacts

In 1990 a revision of the Big Cimarron Allotment Management Plan was undertaken. Current and past grazing activities of cattle and sheep were studied and an intensive vegetative inventory was completed. Some of the findings from that inventory indicated that the riparian zones along the three forks and the main river corridor were suffering from overuse. Overuse had created a loss of valuable vegetation and a general degradation of the fragile stream banks (Mitchell, 1991). Some soil loss can be attributed to the natural geological events of the drainage; i.e, steep gradients and frost wedging of friable rock, but the loss of vegetation and change in plant compositions is a function of compaction and trampling from both cattle and recreation activities along the stream. Much of the overuse within the riparian zones is a result of the continual and cumulative use by both cattle and recreationists. The question then becomes, can each be managed to minimize the impacts along fragile riparian zones.

Both range and recreation managers have recognized the need to reduce impacts along the riparian zones. Although this paper will only focus on recreation strategies, range management alternatives are being developed concurrently to arrest the problem. It has been observed that dispersed camping along the Cimarron River occurs from user preference and not as a result of overflow from the developed campgrounds. The campgrounds rarely fill to capacity and Silver Jack, the most developed of the three campgrounds, receives only a 30% occupancy over the course of the summer. (USFS, 1990, 1991, 1992). It should also be noted that the less developed campgrounds receive a proportionately higher and more consistent occupancy than Silver Jack campground, supporting the hypothesis that many visitors to the Cimarron valley are looking for a more primitive and rustic recreation experience (USFS, 1990, 1991, 1992).

Recreation Management Strategies

When reviewing the options for managing recreation users along the riparian zones, three distinct alternatives became apparent.

Alternative I suggests designating and hardening sites along the riverbanks. This alternative is being considered as a last resort because it is believed that hardening the sites will ultimately lead

to a modification of the existing Recreation Opportunity Spectrum leading to an "ROS creep" of sorts. ROS creep is the slow moving from the more primitive to the more developed end of the ROS spectrum. Since use data indicates that the visitors to the area enjoys, even prefers, the primitive and rustic atmosphere of the Cimarron Valley, management favors other options at this time.

Alternative 2 suggests altering the physical availability of campsites along the riparian areas by developing a form of rest rotation of campsites. This option would temporarily close heavily impacted sites, reseed them and allow them to revegetate. This method employs a "soft sell' approach to the visitor. It announces that the area is "resting" and indicates that it will not remain closed permanently. This method has had favorable success in the short run, yet once the closed areas are reopened, heavy use again continues, ultimately reducing the site to its former state (Broadbear,1990). This alternative is currently being tested along the East Fork of the Cimarron River. Management is optimistic that this alternative coupled with alternative 3 will have some long term positive affects on the riparian zones.

Alternatlve 3 proposes to alter the behavior of the recreation visitor. This option uses interpretation as a management tool to influence visitors to modify camping practices along the riparian zones. To use interpretation effectively it is important to understand some basic interpretive philosophies.

II. INTERPRETATION 101

Interpretation has been defined as *the translation of the technical and often complex language of the environment into nontechnical form, with no loss in accuracy, so as to create in the listener sensitivity, awareness, understanding enthusiasm and commitment.* (Risk 1976). The basic difference between interpretation and traditional education is the setting and the audience motivations: interpretation is directed to people at leisure, usually in a recreation environment. The key here is directing the message toward a noncaptive audience.

Interpretive Principles

Freeman Tilden, recognized and often cited as an authority on interpretation, has outlined basic interpretive principles in his book, Interpreting Our Heritage. Tilden recommends that interpretive communication be based on these principle:

- ***Provoke*** the attention or curiosity of your audience.
- ***Relate*** your message to the everyday life of your audience.
- ***Reveal*** the essence of your subject through a unique viewpoint
- ***Address the whole.*** Show the logical significance of an object to a higher level concept or story line.
- ***Strive for message unity.*** Use a sufficient but varied repetition of cues to create and accentuate a particular mood, theme, aura, or atmosphere.

The fundamental components of interpretation include (I) the source, (2) the message and channel, and (3) the receiver and are described as follows.

(1) The source of the message in this case will be management or the Forest Service.
(2) The channel and message or the how and what will be detailed in Section IV, Methods.
(3) The receiver, or the target audience, is analyzed in Section III, Audience Analysis.

When developing interpretive exhibits or text some helpful hints from past successes and failures can be applied. The USDA Forest Service conducted a survey and compiled data from a two year study of visitor reactions to interpretive displays (USDA, 1989). Their study derived several interesting patterns, some characteristics of which are outlined below.

- Adults with younger children spend more time viewing exhibits than those alone.
- Less than 1% of the people read the entire exhibit copy text.
- The longer and more complex the written message, the shorter the viewing time.
- Various levels and sizes of written copy were popular with those surveyed.
- Retention level is difficult to measure. Virtually no one grasped the entire message. The vast majority only retained a few facts and images.
- Those with higher levels of education (post high school) spent a shorter time viewing exhibits.
- Twenty-five (25) percent of the visitors viewed flat or graphic maps. Retention doubled for locations of roads and geographic features on flat maps versus a topographic map.

John Verveka, professional interpretive consultant, adds these additional behavioral traits to the list (Verveka, 1991).

- First impressions are made in 4-5 seconds and then it is like removing ink to change that first impression.
- The cover is the most important part of the brochure. People don't read brochures; they like to look at them.
- A picture is worth a thousand words, and words have different meanings for different people.
- There are thresholds of interest.
- People remember 10% of what they hear, 30% of what they read, 50% of what they see and 90% of what they do.
- If interpretation is done well, it can and will exceed the limits of learning described above. Reinforce the message by using: "see the...", "touch the...", "hear the...", "do the...", etc.
- To change perceptions, you need to know what the perceptions are.
- Copy text should be geared toward a seventh grade level.

Interpretive Objectives

An important part of developing any interpretation is to identify and develop the objectives. An interpretive objective describes what you expect the visitor to learn, feel, or do as a result of your program or activity. (Verveka, 1993) An objective is measurable. There are three kinds objectives that are used in planning any interpretive program, learning, behavioral and emotional. The following table describes each of these objectives.

OBJECTIVE	DEFINITION	EXAMPLE
Learning Objective	what the visitor should know	The majority of visitors will be able to identify a riparian zone.
Behavioral Objective	what the visitor should do	The majority of visitors will practice low impact camping along stream banks.
Emotional Objective	what the visitor should feel during or after viewing the message	The majority of visitors will feel that riparian zones are essential to man, plants and animals and will want to protect this fragile ecosystem.

Often the behavioral objective will not be accomplished unless the emotional objective is also accomplished. The visitor must feel that his behavior is critical; important enough to make a difference. To understand your reasons is not enough, the visitor must accept them as well. The visitor must feel compelled to act.

Acceptance ⇨ Change of Attitude ⇨ Change of Actions.

Of the three interpretive objectives; learning, behavioral and emotional, Verveka believes that the behavioral objective is the most critical. He questions; if some behavior or attitude change is not required, then why interpret at all? Why is the program being developed? Still others argue that without the emotional objective, or the caring, there will be no behavioral change (Wells, 1993).

III. AUDIENCE ANALYSIS

Who are the people that visit the Cimarron Valley and why do we need to know them? In order for an interpretive message to be effective, it must be designed to answer questions such as: What is the current level of visitor understanding about the topic? Do visitors already have opinions, preferences and attitudes on the topic? Why would the visitor be interested in this information? And what are their motivations for visiting this area?

Understanding the visitor will help to direct the message and develop a medium for the message. Propst and Roggenbuck (1981) contend that there is no such thing as an "average" visitor at recreation areas. Visitors are most often social groups of varying compositions; some are families, some are partial families, and some are groups of friends. Additionally, visitors come to an area for varying reasons; some come to "get away from it all", others come to socialize; some come to enjoy the serenity and beauty of the area and others come for activities such as hiking, fishing or camping. An interpreter must therefore try to reach a common ground among the various visitor types. To carry it off requires a high degree of creativity. This is especially true when using interpretive media that is non personal such as signs or brochures.

Propst and Roggenbuk (1981) also point out that the more familiar recreationists are with an area, the less likely they are to attend interpretive events. A major implication of repeat visitation is that much innovation and creativity on the part of the interpreter will be required to ensure program diversity. The name of the game here is creativity.

G. Machlis in his 1975 masters study, Families in Parks: An analysis of Family Organization in a Leisure Settin concluded that teacher-learner roles are important in families; children can learn from their parents and parents can learn from their children.

So who are the people that visit the Cimarron Valley?

Visitor Profile of the Cimarron Valley

During the summer of 1992, Marcella Wells, Ph.D. candidate at Colorado State University, administered a visitor perception survey to visitors in the Cimarron valley (Appendix B). Using a non-probability sampling strategy, the survey was self-administered, on-site. Visitors were surveyed from a variety of locations that can be classified into five distinct use areas: developed campgrounds, dispersed camping areas along primary road corridors, fishing and riprian areas, popular trails and trailheads, and secondary road corridors. The surveys were distributed on all days of the week between 8:00 a.m. and 8:00 p.m. daily. Every visitor group encountered regardless of activity was asked to participate in the survey. All respondents were presented with a survey and pencil in a ziplock plastic bag. Survey packets were left with respondents for a minimum of 30 minutes and a maximum of 12 hours (e.g. campground or hiker respectively). On a few occasions, a mail back procedure was used to ensure an adequate sample of dispersed area and wilderness area users. A total of 577 responses were analyzed. Highlights from that survey are outlined in the table below. In addition to the Wells survey, data on the Cimarron visitor has been developed through personal observations and from Ouray District annual recreation use reports compiled during 1990-1992 seasons.

SURVEY QUESTION	POSITIVE RESPONSES
Visited the area before	64%
Stayed 1 -3 days	60%
Stayed 4 - 10 days	32%
From the local area	41%
From the Denver area	21 %
From out-of-state	38%

Campgrounds anyone? The Wells survey revealed that of those visitors who stay in the area 4 - 10 days, 42% are camping outside of the campgrounds. A stay of 4-10 days is significant because longer stays along the fragile riparian zones contribute to the damage and degradation of the sites. Generally speaking, when a group sets up camp for several days there is a tendency to create a homestead of sorts. Homestead style camps will impact the sites to a greater degree; for example, hanging clothes lines from trees can damage outer bark, placing a tent or RV in one spot for an extended duration will cause soil compaction.

Observations from Montrose County Sheriff's patrols indicate that the ratio of dispersed users to campground users is about fifty-fifty. This is an unusually high proportion of dispersed campers. Trends for the area show that camping outside of the developed campgrounds will continue at its current rate (USFS 1990, 1991, 1992).

From near or far? Visitors to the Cimarron Valley can be divided roughly into two groups; local and non local. The local visitor generally lives within a 2-3 hour drive of the Cimarron Valley. They typically visit the area on weekends and enjoy recreating in both developed and undeveloped areas. Not all the local users will stay overnight, some will commute daily to the area for social events such as fishing, hiking or horseback riding. Being a repeat visitor to the valley, the local user feels a high degree of personal ownership in the area and is often resistant to managers or "rangers" suggesting behavioral changes.

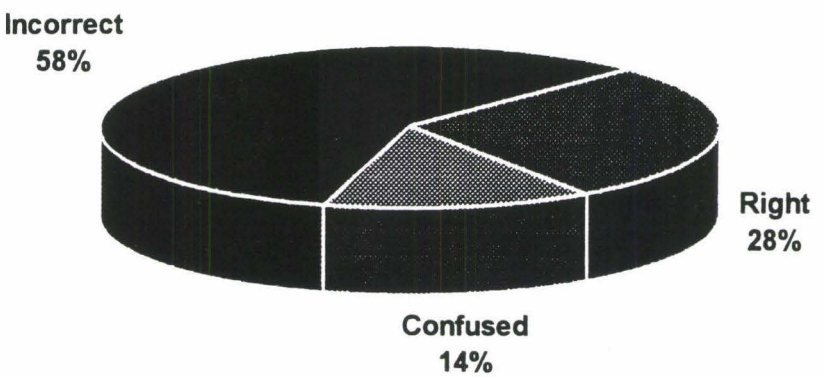
The non local visitor can be divided into two categories. The visitor from the Denver metropolitan area, 300 miles away, and the out-of-state visitor. The Denver visitor may visit for a weekend or stay for a week. Generally, visitors from out of state will stay in the area for 7-10 days. They may have an RV or other self contained unit and enjoy the more developed campgrounds. They appreciate the ample fishing opportunities of the area yet primarily come to enjoy the outstanding scenic beauty and peacefulness that's limited in the cities.

Will they come back? About two thirds of the visitors surveyed were repeat visitors to the valley. The survey indicated that word of mouth through friends or relatives is the primary way that people learn of the area. The Cimarron Valley is relatively undiscovered even through use in the area averages 50,000 visitors during the Memorial Day - Labor Day season. Its undiscovered nature has allowed the area to remain simple and undeveloped. Management strategies perpetuate the

semi-primitive atmosphere of the area. Resisting the tendencies to develop additional campgrounds, pave roads or harden popular camping sites is a conscious effort by management.

Can you name that water zone? The Wells survey, administered on-site in the Cimarron Valley, indicated that most visitors to the Cimarron Valley are unaware of the meaning let alone the ecological significance of riparian zones. This information was the catalyst for developing an interpretive message in the Cimarron Valley. The interpretive goals and objectives were based on introducing the visitor to the word *riparian* and familiarizing the visitor with the role that riparian zones play in nature.

QUESTION: "Pleae provide your best short definition for ***Riparian Area***"



Source: Marcella Wells surey 1992

So What? So what does all this information mean to the interpreter? Visitor profiles prove valuable when developing interpretive messages. By understanding the audience, the interpretor can focus the message and appeal to specific motivations. Several key points revealed through the Wells survey are outlined below. These observations helped to shape the interpretive strategy and message.

1) *The term riparian area is unfamiliar to over 70% of the visitors*. If visitors don't understand the term, managers can't begin to communicate with visitors about resource needs and issues.

2) A high proportion of *recreation activities occur outside the developed sites*, hence the need to address the impacts of those activities.

3) *There is a high percentage of repeat visitors to the area.* Repeat visitors are less likely to attend interpretive events, thus they are a more difficult audience to reach.

4) *Local visitors constitute over 40% of the users to the area.* Local visitors are similar to repeat visitors in that they require more creative methods of communication.

5) *Visitors to the area come for a variety of reasons*. Scenic beauty, fishing and hiking are some of the more popular reasons why visitors come to the area.

IV. METHODS

Management's challenge is the protection of the resource and the promotion of visitor enjoyment. In this scenario, the resource and the visitor come together along the fragile riparian zones. Management can either choose to alter the resource (i.e. close the area or harden the sites) or educate through interpretation. To close the area is contrary to promoting visitor enjoyment. Hardening sites would encourage the trend toward future development. Once an area begins to develop its amenities (roads, parking spurs, tables, grills etc.) it becomes difficult to reverse the trend. As pointed out earlier, the dispersed camper prefers the primitive setting to the developed campgrounds. It is believed that developing additional campgrounds or even hardening and designating sites along the riparian zone would only displace the dispersed user and not solve the real problem.

Why Interpretation?

Currently there are no interpretive signs, programs or brochures for the Cimarron Valley although plans to develop an information center along the main Cimarron road have been approved. Some reasons to develop an interpretive message at this time include:

1. There is a need to protect the riparian zones in the Cimarron drainage.
2. Other alternatives such as closing or hardening sites are not desirable to management at this time.
3. Public involvement in multiple use resource management is essential.
4. Motivation exists to influence visitor behavior and attitudes, try to win them over versus closing sites.
5. An interpretive map is in line with future interpretive planning for this area.
6. The success or failure of this approach will act as a barometer for future interpretive programs.

The Channel - the medium for the message.

The communication medium will be geared toward the dispersed forest user for two reasons: one, behavior along the riparian zones is being targeted for change; and two, an avenue to reach campground users already exists through Campground Hosts and compliance rangers.

The channel for the interpretation will be an interpretive map. The map will be illustrated by a professional artist using light-hearted caricatures. The messages will be technically correct yet simple and humorous. The intent of this method is to use comic graphics as a provocative mechanism that Tilden outlines as one of the basic interpretive principles (Appendix C). A more creative approach is necessary because the target audience, the local and repeat visitor, tends to be more resistant to participating in interpretive programs (US Army Corps of Egr. pp 41-42).

A map has been selected for two primary reasons: first, orient the visitor to the area through illustrations. "Rangers" who work in the Cimarron Valley experience repeat questions on amenities, trails, roads, etc. By using a map the visitor will be able to receive much of this information when a ranger is not available. Secondly, a map layout lends itself to explaining the watershed and ripar-

ian zone interconnection. Since interpreting the riparian zone is the primary theme of the message, a map seemed a logical choice.

From the artist's drawing, a sign board will be created and located on the forest in a highly visible place. Duplicate signs could be placed at popular trailheads. There is an opportunity to convert the artist's drawing into a children's coloring map or picnic table cloths which would be marketed through Western Colorado Interpretive Association and sold on-site in the Cimarron Valley. A coloring map would encourage the parent-child and child-parent learning process.

The Message

The fundamental theme throughout the map will be keyed to the riparian zone; how to identify a riparian area and why it is so important. Sub themes will be woven in throughout the map. Sub themes will be anecdotal revealing historical, cultural and biological details.

Themes and sub themes were researched with the help an of outside agency and in-house sources. Colorado Division of Wildlife, US Geological Survey Colorado Water Resource Division and Bureau of Reclamation provided many facts and inputs toward the hydrological and biological theme development. E. Polly Hammer, Forest Archaeologist, provided facts relating to the historical and cultural background on the Cimarron Valley.

Interpretive Theme

Primary Theme - The primary theme will define riparian habitat by illustrating the following concepts.

- Portray the head waters of theCimarron rivers
- Illustrate the Cimarron river and it's course to the Gunnison River which is the source of water for the community of Montrose, Co.
- Highlight the typical vegetation that is found along a riparian zone.
- Show that riparian vegetation like to get their feet wet.
- Explain how root systems control sediment movement.
- Show the American Dipper as a bird dependent on healthy riparian vegetation.
- Illustrate a healthy fish habitat in relation to a healthy riparian zone.

Sub themes - The sub themes will depict cultural, historical and biological facts about the area by illustrating the following details.

- Information about the Silver Jack Mine.
- Larkspur, the plant that is friendly to sheep but deadly to cows.
- The historic Jackson Ranger Station.
- How the water fall came to be.
- That the Ute Indians were the first people to graze sheep in the Cimarron Valley.
- That Big Horn Sheep are native to this valley, hence the name of Sheep Mountain.
- That elk, although indigenous to Colorado and the Rocky Mountains, had to be reintroduced into the Cimarron Valley.

Interpretive Objectives

The learning, behavioral and emotional objectives for the interpretive map are defined below.

Learning - After viewing the interpretive map, visitors should know the following information:

1. Understand and recognize the word riparian.
2. How to identify a riparian zone.
3. Learn that the water from the Cimarron River eventually ends up in Montrose's municipal water supply.
4. Know that certain plants and animals require a riparian zone to survive.
5. Understand that a healthy riparian zone influences healthy fish habitat.
6. Recognize locations of amenities such as outhouses, potable water and telephone.

Behavioral - After viewing the interpretive map, visitors should take the following actions:

1. Inquire about riparian zones and their role in nature.
2. Practice low impact camping techniques along riparian zones. Some low impact techniques are camping away from fragile riparian zones, parking vehicles away from stream banks and using detergents away from water sources.

Emotional - While viewing the map, visitors should feel the following emotions:

1. Surprise that the zone is so important to so many animals, plants and man.
2. Surprise that the water from the Big Cimarron River ends up in Montrose.
3. Curious for more information on the area.
4. Amused yet informed.

Evaluating the final product

Evaluating effectiveness of the interpretive program is obtained through feedback. In the case of the Cimarron Interpretive Map, feedback must be analyzed at two levels; during production and after the final.

Once the artist completed his draft drawings a review of the work for technical correctness was undertaken. Various specialists, including a biologist, an archaeologist and a range conservationist reviewed the work. Minor adjustments were made to the map to increase clarity and keep the facts honest. Additionally, the five interpretive drawings specific to riparian areas were presented to a test group of junior high students for review. The test group consisted of 22 sixth graders from a local school. The classroom was chosen randomly. The students reviewed and critiqued the drawings and text for clarity. The class had no formal education in riparian zones or ecosystems. It was apparent from their responses that only a few students had heard the term riparian prior to this testing.

Feedback from the test group. The students were shown an overhead of a drawing without any associated text. They were asked to write down what the drawing said to them. Once written down, they were asked to verbally share their comments. The students were then shown the picture with its caption and told the intent of the message (Appendix D). At that point, the students were asked to change the picture or caption to better illustrate the message. The students were asked to write down all of their comments. Their written comments were particularly helpful since they could be reviewed and reanalyzed at a later date. The students provided some very

basic and profound observations. Many of the illustrations were modified based on their feedback. Unbeknownst to them, the students also tagged the title caption, "Along the Water's Edge". This phenomenon, of innocent yet profound observations, occurred repeatedly yet very subtly. Four of the five drawings/captions were modified based on their feedback.

Authors footnote: It was interesting to note that the only illustration the students were unable to evaluate (because it was unavailable at the time of the testing) is the one interpretive message that never really worked. The message depicting montrose's municipal water supply as being connected to the Cimarron drainage was modified several times by the artist yet does not tell the story that the interpreter had intended.

Feedback from the target audience. Once the final drawing is distributed under various mediums, signs, coloring books, posters or table cloths, input from the audience will determine if the interpretive objectives are being realized. The true test of course is visitor behavior. Can behavior or attitudes be modified as a result of receiving this new information about riparian zones? Ideally a program to monitoring visitor's behavior for several years that would detect any changes in behavior or attitudes that could be attributed to the interpretive messages should be implemented. It is necessary to obtain feedback from visitors about their comprehension and feelings concerning riparian areas. What would make the message more effective? This feedback would then be used to develop future interpretive programs in the Cimarron Valley.

V. SUMMARY

Managing diverse and sensitive ecosystems are always challenging. Managers are continually challenged to find new methods of satisfy conflicting uses. Protecting fragile riparian zones that by their very nature draw people to its shores is one such challenge. Evoking management's prerogative to close areas to public use is one alternative, educating and modifying visitor behavior is another alternative. Interpretation is a method of educating visitors and if successful, perhaps a method of behavior modification.

Developing effective interpretive messages can be quite challenging. The primary steps in developing an interpretive message include answering the questions; why, what, who and how.

Identify the Problem	**or**	**Why?**	→	*Resource impacts along fragile riparian zones.*
Develop the Message	**or**	**What?**	→	*Primary Theme = Riparian definations.* *Sub themes = cultural, historical & biological facts of the area.*
Analyze the Receiver (audience)	**or**	**Who?**	→	*41% are local visitors.* *66% are repeat visitors.* *72% don't understand about riparian zones.*
Determine the Channel (medium)	**or**	**How?**	→	*Interpretive map using caricatures to exaggerate the message.*

Defining the message, the channel and the medium require understanding the receiver or the audience. After the channel, medium and message have been determined, developing the graphic presentation is next. An interpretor/illustrator has the advantage of both art forms and could pull this together unaided. The interpretor on the other hand can only accomplish great feats by finding the right illustrator. Working with an illustrator/artist to convert the written message into a graphic expression can be arduous for both the illustrator and the interpretor. Delving into a nontraditional approach, such as a caricature map adds another dimension to the project again adding time and extra drawings to the project.

Is it worth it? When a graphic works, it sends a clear concise message and intrigues its audience. When a graphic is only adequate, it will never move people to change behavior or interests. The value in an interpretive illustration is in the results. If it works, it was worth it.

Ranger Joe Rides the Range. During the summer of 1993, an interpretive program was implemented in the Cimarron Valley. To reach campers outside of the campgrounds, a mounted "ranger" rode along the Forks of the Cimarron River talking with visitors from his steed and passing out interpretive materials on resource issues. Posters of the interpretive map (Appendix E) were among the material handed out. In addition to this effort, a campfire talk was given every Saturday evening. The campfire talk was presented outside of the campgrounds. The intent of the campfire talk was twofold, to entertain the visitors and educate them on various resource issues at the same time. Each week the ranger would weave a different environmental message into his performance. Concurrent with the interpretive effort, Marcella Wells again surveyed visitors in the Cimarron Valley. Data from that survey may indicate whether these interpretive efforts have increased the publics' knowledge and understanding of targeted resource issues. Riparian management was one such issue. Data from that survey is not available at this time.

The success of this nontraditional management approach is yet to be decided. Visitor's reactions to the interpretive map have been favorable. Visitors to the area enjoy reviewing and using the poster. Recently, the poster was made into picnic table cloths. The table cloths have been distributed to Campground Hosts in the Cimarron Valley and to several teachers in the Montrose community. The effectiveness of the map in terms of meeting the learning, behavior and emotional objectives will ultimately rank the success of the program in meeting management's objectives. In other words, has the interpretive message moved any of the visitors to modify their behavior? Unfortunately, there is no formal long range monitoring program in place. However, land managers for the Cimarron Valley are committed to informing visitors about fragile ecosystems and the need to protect them. The interpretive map will continue to be an aid in this endeavor. Only time will determine if this educational effort has been an effective management strategy.

≠

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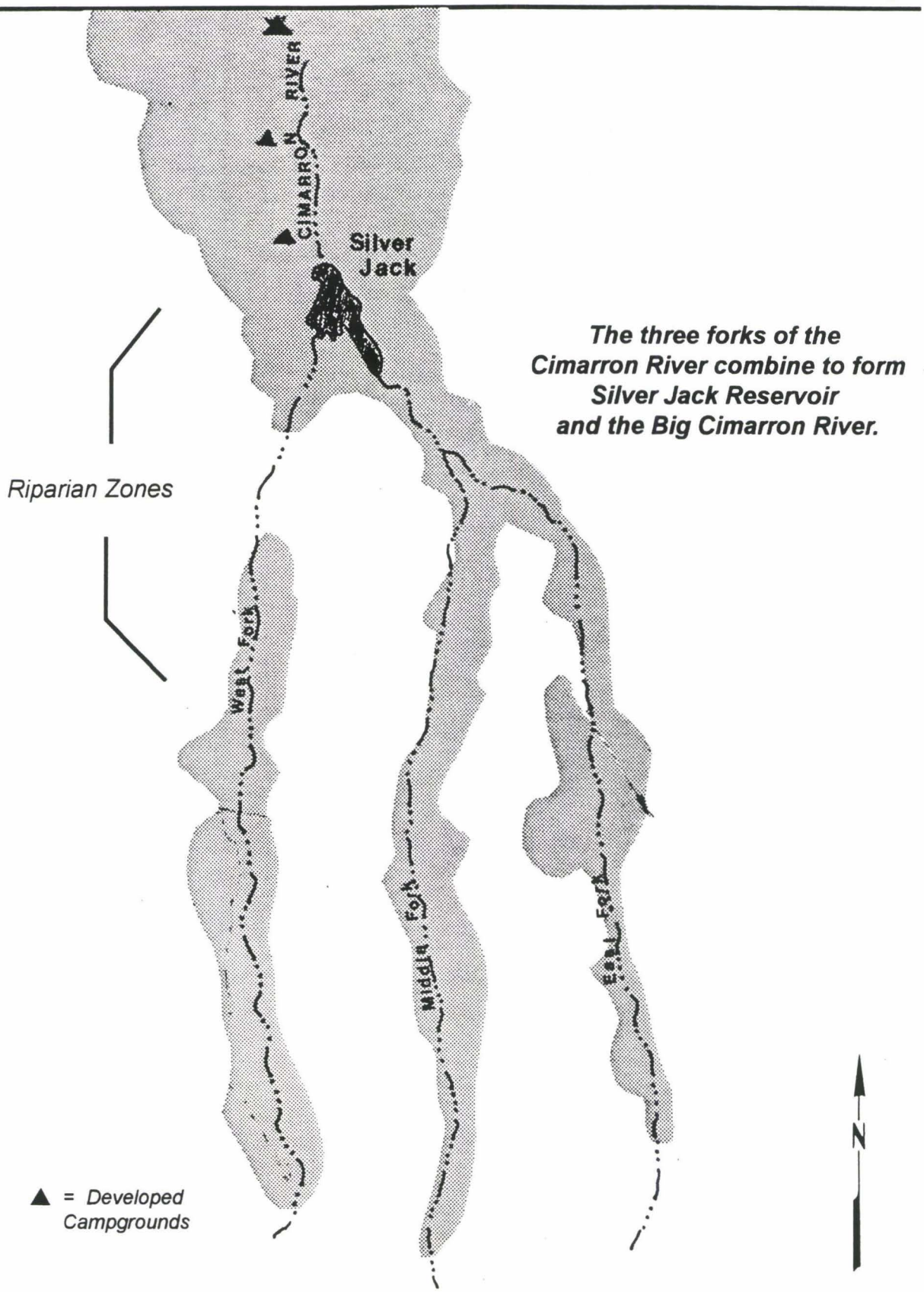
APPENDIX A

Map of the Riparian Zones within the Cimarron Valley.



Source: Geological Map of Montrose Quadrangle, Southwest Colorado
T.A. Stevens and W.J. Hail, 1989

APPENDIX B

Colorado State University Visitor Survey

Colorado State University

Department of
Recreation Resources
and Landscape Architecture
College of Forestry and
Natural Resources
Fort Collins, Colorado 80523
(303) 491-6591
FAX: (303) 491-2255

VISITOR INFORMATION SURVEY

Thank you for agreeing to complete the following survey. Your answers to these questions will help Forest Service managers do a better job of managing the area and providing visitors with the best possible experiences. Please return your completed survey to the researcher, to the Jackson Guard Station, or to the campground hosts before leaving the Big Cimarron area.

SECTION I - ABOUT YOUR VISIT

1. Have you visited the Big Cimarron/Silver Jack area before?
   _____NO
   _____YES -----> How many times? _____

2. Will your visit here include an overnight stay?
   _____ NO
   _____ YES -----> Will you:
   - _____ stay in a campground?
   - _____ make camp in a dispersed area?
   - _____ camp in the Big Blue Wilderness?
   - _____ stay in a cabin or lodge?
   - _____ other (please indicate) _____

3. How long will you stay in the Big Cimarron area on this visit? _____

4. What is the main reason you decided to visit this area? _____

   _____

5. Where is your home? _____

6. How many are in your group?
   _____ children age 1-12
   _____ teens age 13-19
   _____ adults age 20-60
   _____ seniors over 60

7. Please indicate below what activities you intend to participate in during your visit? (Check all that apply)

_____ Hiking	_____ Horseback Riding	_____ Fishing
_____ Camping	_____ Driving for Pleasure	_____ Hunting
_____ Backpacking	_____ Wildlife Viewing	_____ Picnicking
_____ Boating	_____ Mountain Biking	_____ Other (indicate) _____

8. What do you like most about this area? _____

   _____

9. Has anything interfered with your enjoyment of the area? If so, please describe. _____

   _____

   _____

10. Please indicate how important each of the following experiences is to you on this visit.

	Not At All Important	Slightly Important	Somewhat Important	Very Important	Extremely Important
Time with family	0	1	2	3	4
Physical exercise	0	1	2	3	4
Seeing and enjoying nature	0	1	2	3	4
Rest and relaxation	0	1	2	3	4
Getting away from crowds	0	1	2	3	4
Adventure, excitement, risk	0	1	2	3	4
Solitude, reflection	0	1	2	3	4
Meeting new people	0	1	2	3	4
Being with friends	0	1	2	3	4
Learning and exploration	0	1	2	3	4
Developing skills	0	1	2	3	4
Challenge and achievement	0	1	2	3	4

11. Please indicate how encountering each of the following affected your overall experience on this visit.

	Detracts A Lot	Detracts Some	Neither	Adds Some	Adds A Lot	Did Not See
Other people	-2	-1	0	+1	+2	X
Campground hosts	-2	-1	0	+1	+2	X
Forest Service staff	-2	-1	0	+1	+2	X
Wilderness Ranger	-2	-1	0	+1	+2	X
Wildlife	-2	-1	0	+1	+2	X
Livestock	-2	-1	0	+1	+2	X
Horseback riders	-2	-1	0	+1	+2	X
Dogs or other pets	-2	-1	0	+1	+2	X
Fishermen or hunters	-2	-1	0	+1	+2	X
Off road vehicles	-2	-1	0	+1	+2	X
Mountain bikers	-2	-1	0	+1	+2	X
Backpackers	-2	-1	0	+1	+2	X

12. Have you noticed any impacts to the natural environment that you believe were caused by inappropriate use or management?

_____ NO

_____ YES ---------> Please describe the impact and the behavior you think caused it. _____

_____

13. Are there changes you would like to see in the way the area is managed?

_____ NO

_____ YES ---------> What would they be? _____

_____

14. Overall, how would you rate your visit to the Big Cimarron? (Circle your response)

Excellent Good O.K. Fair Poor

		Strongly Disagree	Somewhat Disagree	Neither	Somewhat Agree	Strongly Agree	Not Very Important	Somewhat Important	Very Important	Need More Information
t.	Western rangelands are typically diverse enough to support both wildlife and livestock.	-2	-1	0	+1	+2	1	2	3	X
u.	If properly managed, grazing and recreation are compatible uses in some areas.	-2	-1	0	+1	+2	1	2	3	X
v.	Wilderness grazing is acceptable because some cattle allotments pre-date the passage of the Wilderness Act.	-2	-1	0	+1	+2	1	2	3	X

3. **Some people feel that grazing is a proper use of public lands, as long as some porportion of those lands is not grazed by domestic livestock and left in a natural vegetative state. Do you share this view?**
   _____ No
   _____ Yes ----> What percentage of public lands do you feel should be retained in a natural condition? _____ %

SECTION IV - DEFINITIONS (optional)

Forest Service staff and researchers would like to know how much the public understands about technical terms and ideas used while managing public lands grazing. Please provide your best short definition for the following.

Multiple Use _____

_____

Ecosystem _____

_____

Grazing Allotment _____

_____

Habitat _____

_____

Riparian Area _____

_____

Range Condition _____

_____

Permittee _____

_____

Wilderness _____

_____

SECTION V - ABOUT YOU

1. Which category below best describes, (A) the type of community you spent most of your time growing up (to age 18), and (B) the community where you live now?

A	B	
_____	_____	farm or rural community
_____	_____	community with population under 10,000
_____	_____	community with population 10,000 to 49,999
_____	_____	community with population 50,000 to 99,999
_____	_____	community with population 100,000 to 300,000
_____	_____	major metropolitan area, population over 300,000

2. I eat red meat
   _____ frequently
   _____ sometimes
   _____ seldom
   _____ never

3. What is the zip code for the area in which you live? ___ ___ ___ ___ ___

4. What was your age at your last birthday? _____

5. Are you?
   _____ White, not of hispanic origin
   _____ Black, not of hispanic origin
   _____ Hispanic
   _____ American Indian or Alaskan Native
   _____ Asian or Pacific Islander
   _____ Other (specify) _____

6. Circle the highest level of education you have attained.

0 1 2 3 4 5 6 7 8	(Elementary/Secondary)
9 10 11 12	(High School/GED/Vocational School)
13 14 15 16	(College or Technical School)
17 18 19 20 21 22	(Graduate/Post Graduate School)

7. What is your occupation? _____

8. Which of the following categories best describes your 1991 annual **household** income, before taxes?
   _____ less than $10,000
   _____ $10,000 - $19,999
   _____ $20,000 - $39,999
   _____ $40,000 - $59,999
   _____ $60,000 - $79,000
   _____ $80,000 - $99,999
   _____ over $100,000

THANK YOU VERY MUCH FOR YOUR HELP!

Printed on recycled paper

Colorado State University

Department of
Recreation Resources
and Landscape Architecture
College of Forestry and
Natural Resources
Fort Collins, Colorado 80523
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Summer 1992

Hello,

Welcome to the Big Cimarron!

This summer Colorado State University and the Forest Service Experiment Station are conducting some visitor research in the Big Cimarron area. We want to sample hikers, fishermen, and backcountry users as well as campground visitors. To do this we would like to ask you a favor. Would you kindly complete the enclosed survey which contains several questions about your visit to this area? The survey should take you about 20 minutes and the information you provide will help the Forest Service make better management decisions about your public lands.

When you have completed the survey, please simply attach it to your numbered campsite post before you depart the campground. I visit this campground at least once a day. I will retrieve your completed survey when I see it clamped to your post. A pencil is enclosed for your convenience.

Thank you in advance for your time. Enjoy your visit to the Big Cimarron.

Sincerely,

Marcella Wells
Researcher

APPENDIX C

Interpretive Themes and Subthemes

STORY PICTURES AND CAPTIONS

A. TITLE: ALONG THE WATER'S EDGE

The land along the water's edge is called a Riparian zone. Many plants and animals need the riparian area to survive. Only 1% of the Western United States have riparian lands. These areas, like the Cimarron Valley, are so special that they become an oasis for animals and people.

PRIMARY THEMES:

B. illustrate the headwaters of the rivers starting from snow melt, illustrate the waters going to Montrose.
Caption1: "Here's where it all begins, the headwaters of the River start at the top of the mountain just like your head is at the top of your body."
Caption 2: "Here's where it ends, in your home, garden or farm."

C. ***Caption:*** "Habitat means home" "How many animals can you find that make their home along the water's edge?"
- illustrate riparian vegetation/ riparian habitat include: willow bushes, bunch grasses, cottonwood/aspen trees and Blue Spruce trees.

D. ***Caption:*** "Riparian plants like to get their feet wet."

E. ***Caption***: "Fish need cool water. Plants help shade the stream."
- illustrate with a fish in a lawn chair w/ sun umbrella and a glass of ice tea. OR fish with an electric fan blowing on him.

F. ***Caption:*** "Trampling plants along the river can make them disappear."
- illustrate with plants looking up at a boot, saying "oh, no not another Nike"

G. ***Caption:*** "The roots of plants hold the soil in place."

H. ***Caption:*** "The American Dipper bird eats insects that only live along the river." "Can you guess why they're called dippers?"

I. ***Caption:*** "Wilson's warbler stops along the Riparian area to raise his young before heading south for the winter."
- illustrate with a family of birds with suitcases, maybe a stamp on his suitcase that says, 'Mexico or bust'.

SUBTHEMES:

J. ***Caption:*** "Larkspur, the plant that is deadly to cows and friendly to sheep."
- illustrate with a grave site complete w/ headstone. Show the name 'Elsie the Cow' on the headstone. Have a Larkspur growing out of the grave, with a sheep standing on the grave eating the Larkspur and smiling.

K. ***Caption:*** "A secret waterfall."
- illustrate a waterfall in the middle fork, see map for location.

L. ***Caption:*** " Chief Ouray and the Ute Indians were the first to graze sheep in this valley".
- illustrate with Indians grazing sheep

M. ***Caption:*** "The Ute Indians' last summer hunting camp is at the bottom of the Silver Jack Reservoir"
- illustrate with an Indian and a Tee Pee

N. ***Caption:*** "Did you know that Elk were transplanted to this area in the 1930's.

O. ***Caption:*** "Big Horn Sheep have always lived in these mountains" "Can you guess how Sheep Mountain got its name?"

APPENDIX D

Sample Graphics
Illustrations that were presented to the test group.

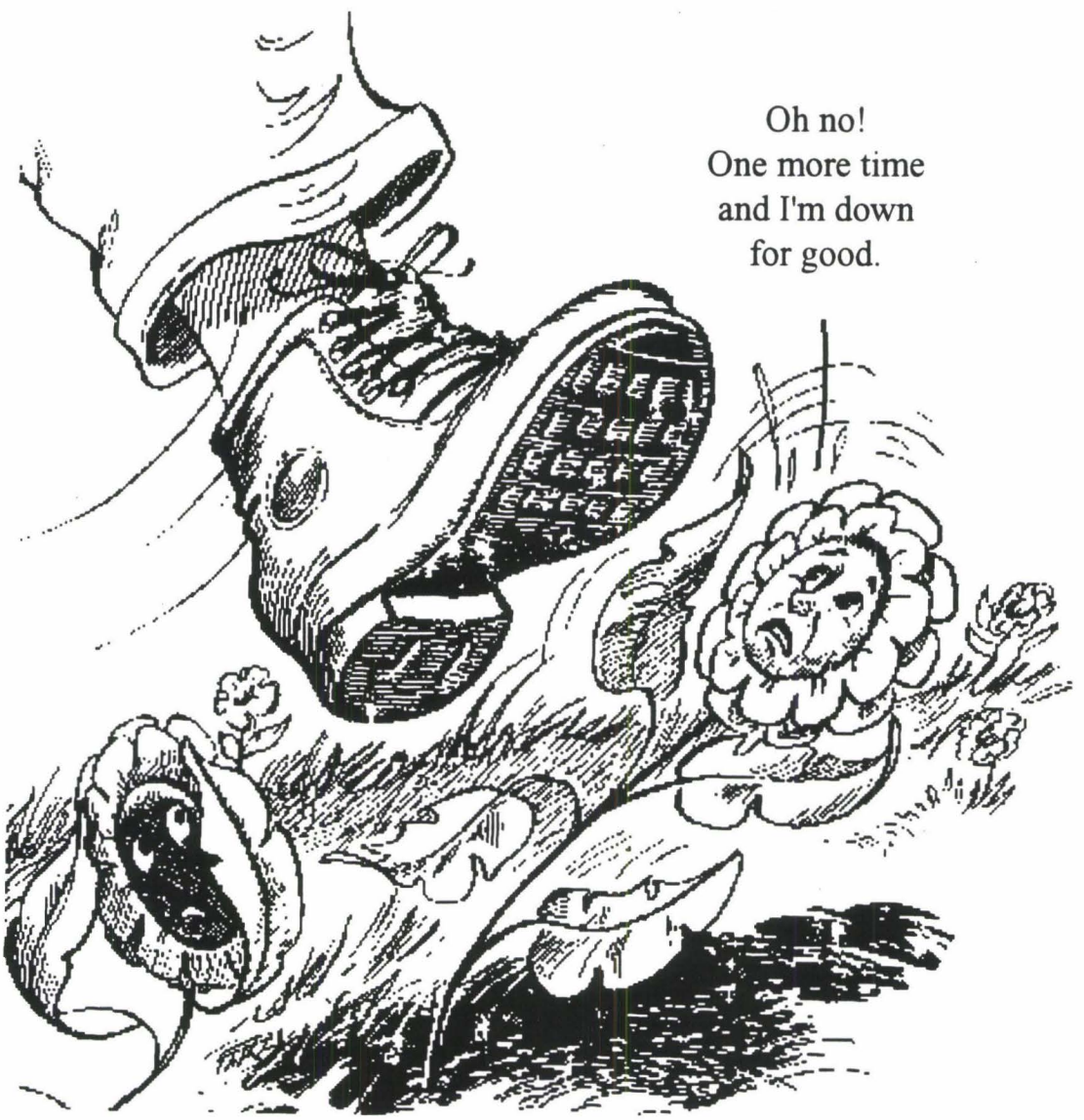
SAMPLE GRAPHIC
Presented to Student Test Group

RIPARIAN PLANTS LIKE TO GET THEIR FEET WET.

SAMPLE GRAPHIC
Presented to student test group

The American Dipper bird lives off insects that live along the river bottom.

SAMPLE GRAPHIC
Presented to student test group



Trampling plants along the river can make them disappear.

APPENDIX E

The Final Product: Riparian Interpretive Map

Along the waters edge...

What do you call the land along the water's edge? Only 1% of the Western United States are wetland areas. Places like the Cimarron Valley are so rare that they become an oasis for many plants, animals and people. This special land along the water's edge is called a *Riparian Area.*

← 40 MILES TO MONTROSE

ELRANCHO STORE

BEAVER LAKE

ASPEN TREES

RIPARIAN HABITAT INCLUDES willow bushes, bunch grasses, cottonwood and Aspen trees

COTTONWOODS

ELDAR LANE

TRAIL

SILVER JACK CAMPGROUND

PICNIC AREA

HIGH MESA

Did you know that Elk were reintroduced in the 1930s?

WILLOWS

LARKSPUR

CIMARRON RIDGE

The plant that is deadly to cows and friendly to sheep.

I can only get my food from the insects that live on the rocks along the river bottom!

COWBOY LAKE

ALPINE TRAIL

BOAT RAMP

One of the Ute Indians last summer hunting camps is at the bottom of Silver Jack Reservoir

MIDDLE FORK

EAST FORK

SHEEP MOUNTAIN

"Big Horn Sheep have always lived in these mountains"

Can you guess how Sheep Mountain got its name.?

TO LAKE CITY

Riparian plants like to get their feet wet.

HOOD OR BUST

heading south

Wilson's Warbler stops along the Riparian area to rest his young before...

EAST FORK TRAIL

Chief Ouray and the Ute Indians were the first to graze sheep in this valley

TO OURAY

OWL CREEK PASS

TURRET RIDGE

PINNACLES

SILVER MOUNTAIN

WEST FORK

CHIMNEY ROCK

COURTHOUSE MOUNTAIN

The roots of plants hold the soil in place

Cold fresh water

plants help shade the stream

A Secret Water Trail

Habitat means Home

How many animals can you find that make their home along the waters edge.

SILVER JACK MINE CLOSED 1930

SEDGES

RIPARIAN HABITAT

MIDDLE FORK TRAIL

NORTH

SOUTH

PRECIPICE PEAK

OH NO! ONE MORE TIME AND I'M DOWN FOR GOOD

TRAMPLING PLANTS ALONG THE RIVER CAN MAKE THEM DISAPPEAR

WETTERHORN TRAIL HEAD

COXCOMB PEAK

Big Blue Wilderness

MATTERHORN

the headwaters of the rivers start at the top of the mountains just like your head is at the top of your body.

WETTERHORN

UNCOMPAHGRE PEAK